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## THE DIAMOND.

HE crystalline forms in which the Diamond occurs in Nature belong to the group of geometrical solids known to crystallographers as the Cubic or Tesseral, or Isometric system. The surface of a crystal of Diamond is generally smooth; but it is sometimes indented with triangular impressions, and in certain cases is striated with lines parallel to the edges of the faces. Diamonds present a rough surface, resembling a poorly polished glass, and are not unfrequently dull, as though covered with a thin coating of gum. The Diamond presents a perfect cleavage parallel to the faces of the octahedron, which is its primary form. The Diamond cutter avails himself of the knowledge of this natural structure, and is thereby enabled in many cases to remove spots from a stone by cleaving, without resorting to the weary work of grinding. In addition to the property of cleavage, the Diamond possesses preeminently that of hardness, a quality in which it so exceeds all other bodies that it can penetrate them without being itself even scratched. The conditions which the Diamond presents in relation to light are very remarkable. It is one of those bodies which refract light most strongly, that is to say, when a ray of light enters a Diamond, it is turned from its original path to a much greater extent than if it had entered a Topaz, or a Rock Crystal, or a piece of glass, or, in fact, any other transparent medium. In addition to this property it also possesses the power in an extraordinary degree of reflecting and dispersing the rays of light, thus causing what is technically termed the "play of colours," observable on a well-cut Diamond. The optical term, dispersion, is applied to the power which a transparent substance possesses of breaking up the incident white light into prismatic tints, like those of the rainbow, a power which is enjoyed to an unusual extent by the Diamond, and gives rise to the splendid flashes of fire emitted by a

stone that has been skilfully cut. The Diamond in its purest condition is colourless and transparent, yet at times it is found coloured throughout of almost every possible tint, the colours ranging from bright canary yellow to a deep brown and black, and in very rare instances green, blue, pink and red; these latter tints are highly valued as fancy stones.

The Diamond is a non-conductor of electricity, a fact which is the more remarkable as Graphite or Charcoal, substances absolutely identical with it chemically, are very good conductors. By friction, however, both in the rough and polished state, it becomes positively electric, but loses its electricity completely in the course of half-an-hour. When exposed to the intense heat of the electric arc, the Diamond swells up, becomes black, and is converted superficially into a substance resembling Graphite. Diamonds are found in India, Sumatra, Borneo, Brazil, and South Africa, parts of North America, British Guiana, the Ural Mountains and Australia. Other countries have been pointed out, but confirmatory evidence of the truth of this assertion is required.

A remarkable discovery has recently been made which has invested the Diamond with an interest even greater than it could previously claim. Scientists in submitting certain meteorites or sky-stones to a careful examination have found in some of them carbon in a diamontoid condition. It is true that this carbon was rather of the character of carbonado, the black variety of Diamond; but still the presence of any kind of Diamond in an ærolite is a fact of surpassing scientific interest.

Composition	111	***	***	Pure Carbon.
Specific Gravi	TY	444	111	3.52 to 3.53.
HARDNESS				
System of Cry	STALL	IZATION		Isometric or cubicai.
				Octahedron, Rhombic Do- decahedron, Hexakis, Octahedron, etc.



# THE RUBY.

HE Ruby not only stands in the very foremost class of coloured gems, but it occupies among precious stones in general a position which is unquestionably supreme. By the ancients it was regarded as the very type of all that was most precious in the natural world; and its value is amply attested by the numerous allusions to it in the Old Testament.

Before mineralogy became a science, and could call to its aid the services of chemistry and physics, it was by no means surprising that various stones of red colour should be confounded together; thus the Spinel or Balas and the Garnet were often mistaken for the true Ruby. The only stone, however, to which the term Ruby can in scientific strictness be applied is a variety of the mineral-species termed Corundum. crystals of Corundum are often ill-shaped and rough, and usually much rolled. The lustre of Corundum is vitreous, but sometimes pearly on the basal planes, and the crystals, when properly cut, occasionally exhibit a bright opalescent star of six rays in the direction of the principal axis. Such crystals form the star stone. The refractive index of Corundum is 1.77, and therefore higher than that of glass; hence the great brilliancy of the Corundum gem stones, when properly cut and polished. All varieties of Corundum can be scratched by the Diamond, but by no other mineral. Although Corundum is a mineral which, in its various forms, enjoys a fairly wide geographical distribution, it is remarkable that the fine red varieties are extremely rare and restricted in their occurrence. The localities yielding the Rubies of commerce are indeed practically limited to Burmah, Siam, and Ceylon. Even of these localities it is only Burmah that has acquired celebrity for the favourite tint, the true pigeon's-blood colour; those of Siam being generally too dark, and those of Ceylon too pale, to satisfy the connoisseur, though in both places a fine gem

is occasionally found. The price paid for Rubies by the ancients was very high. According to Benvenuto Cellini, in his time a perfect Ruby of a carat weight cost 800 ecus d'or, whilst a Diamond of like weight cost only 100; the same applies to day, for the Ruby ranks in price above all other stones. When a perfect Ruby of five carats is brought into the market a sum will be offered for it ten times the price given for a Diamond of the same weight; but should it reach the weight of ten carats or more it is almost invaluable. fine stone may have its value considerably depreciated by injudicious cutting, as is generally done in the East by native lapidaries; apart from the question of workmanship (which it is well-known is inferior), the Indian and European systems are so utterly opposed that the result must be a loss either of weight or beauty. The native cuts for weight only, without the least regard for either brilliancy or shape; whereas on the other hand, the English lapidary cuts for brilliancy and colour even at the sacrifice of weight. In a perfect-shaped stone the front, i.e., the part that is above the girdle, should be onethird, and the back two-thirds of the total thickness of the stone; experience shows that these proportions give the best effect. The author has devoted many years to the perfecting of the cutting of precious stones and has established a laboratory where stones, either in the rough or cut, are worked. Owners of precious stones are cordially invited to consult him as to the advisability of having their gems re-cut or re-polished, thereby often much enhancing their brilliancy and value.

Composition		***	Alumina, with traces of Oxide of Iron, &c.
SPECIFIC GRAVITY		(0.00)	4.
HARDNESS			9, or slightly under.
System of Crystallisa	ATION	****	Hexagonal.
FORM			Six-sided prisms and pyramids, variously modified, but usually



# THE SAPPHIRE.

HE Sapphire is a variety of Corundum, or crystallized alumina; and much, therefore, that was said under the head of Ruby will apply to the Sapphire. characteristic colour of the Sapphire is a clear blue, very like that of the blossom of the little "Cornflower," and the more velvety its appearance, the greater its value. Some Sapphires retain their colour by gaslight, while others become dark, and some assume a reddish or purple colour, and occasionally have the hue of the Amethyst. While the typical colour of the Sapphire is blue, it should be explained that the term "Sapphire" is extended by mineralogists and jewellers to Corundums of other colours. Thus, we have green Sapphires, various shades of yellow and grey, while others again may be entirely destitute of colour; these pure white Sapphires being sometimes mistaken, when skilfully cut, for Diamonds. The principal Sapphire yielding localities now worked are in Siam, Burmah, Cashmere, and Ceylon. The Sapphires of Siam are the finest at present in the market; the mines in Cashmere have yielded some very fine stones, but the great majority are only of a pale grevish blue. Large deposits of Sapphire have been found in Montana, but the stones are mostly of green and other fancy tints, and not deep blue. A remarkable characteristic of the Montana stones is their great brilliancy when cut, almost rivalling that of the Diamond.

Sapphires are also known to occur in Borneo, Madagascar, the Ural Mountains and several other localities. In Europe they are found on the Iser, in Bohemia; in the Sieben-Gebirge, on the Rhine; in Saxony; and in France, notably at Expailly, near Le Puy-en-Valey. The European Sapphires, however, are only of scientific interest to the mineralogist, and of no commercial value.

Many large crystals of Sapphire have been found in Australia, but they are of such a dark inky blue colour, in some cases

being almost opaque, that they are of little value as Precious Stones. The value of Sapphires is very much determined by special circumstances, and, like the Diamond, the colour, purity, and size must be taken into consideration when fixing the sum to be paid. A perfect Oriental Sapphire, weighing between two and three carats, is nearly as costly as a good Diamond of like weight. The imperfections which appear at times in the Sapphire, and which lessen its value, are clouds. milky half-opaque spots, white glassy stripes, rents, knots, a congregating of colour at one spot, and silky-looking flakes on the table of the stone. Varieties of the "Doublet" are made of the Sapphire as well as of the Ruby and other gems; these consist of thin layers of true stone facing crystal, so as to appear but one stone. They may be distinguished from the genuine stone partly by their colour, but more especially by a careful examination of the girdle, when the join may usually be readily detected. Notwithstanding the extreme hardness of the Sapphire there are some beautifully engraved specimens of this gem in existence. In the cabinet of Strozzi, in Rome, is a Sapphire, a masterpiece of art, with the profile of Hercules engraved on it by Cneïus. A very remarkable and famous Sapphire, belonging to the Marchese Rinuccini, weighing fifty-three carats, has a representation of a hunting scene engraven upon it, with the inscription "Constantius Aug." Among a number of old family jewels there was found by the author, some few years ago, a Sapphire beautifully engraved with the crest and arms of Cardinal Wolsev.

Composition	***		1000	Alumina.
SPECIFIC GRAVI	TY	***		4, or slightly under.
HARDNESS	444			9.
System of Cry	STALLE	ZATION		Hexagonal.
FORM	***	***	111	Double six-sided pyramids, or prisms; usually as rolled crystals.



## THE EMERALD.

HE Emerald, from a mineralogist's point of view, belongs to a class of stones altogether different from that which embraces the precious stones already described, inasmuch as it is essentially a mineral silicate, consisting largely of the substance known to chemists as silica. The silica is itself an oxide of an element termed silicon, which is closely related in many ways to carbon. In the Emerald the silica is combined with the oxides of two metals—one of them being aluminium, the basis of the Ruby and Sapphire; while the other is an exceedingly rare metal, known as glucinum or beryllium. Just as it was shown that the Ruby and the Sapphire are identical, save in colour, so the chemist has found that the Emerald, the Beryl, and the Aquamarine are practically the same mineral, the distinctions between the three varieties being due to differences of colour and other characteristics of only trivial value to the chemist, though of immense importance to the jeweller as affecting their commercial value. The Emerald is found crystallised in six-sided prisms or columns, without striations, and, therefore, unlike those of Beryl, and without any inclination to the cylindrical form. The colour varies from what is called emerald-green to grass-green and greenish-white. The variety of opinion as to the source of the beautiful colour of the Emerald is very interesting, but according to most authorities it owes its beauty to the chromium which it contains. It is doubtful if Emeralds have ever been found in India, though they are sent there in the rough from other localities, and after having been cut in India are forwarded to this country for sale. It is said that in Burmah Emeralds have from time to time been picked out of the sand or beds of small rivers. In the treasure from Mandalay, now in the South Kensington Museum, are some very large Emeralds, but they are probably from South America.

The Ural and Altai Mountains have of late years furnished true Emeralds. Very fine crystals of Emerald are found in mica-schist at Stretnisk, on the River Takowja, which lies to the north of Katherinenburg, on the Asiatic slope of the Urals. The minerals also occur in the Mountains of the Sahara, in beds of mica-slate, and in the bed of the River Harrach, in Algeria, where it joins the River Oned Bouman. Emeralds have been recorded from several localities in New South Wales, but they are rare, and usually of no commercial value.

The most famous Emerald mines of the world are those of Muzo, about 75 miles N.N.W. of Santa Fé de Bogata, in the Republic of Columbia. They were discovered by Lanchero in 1555, but the Spaniards did not commence working until 1568. In Eastern Egypt too, at Sikait and Jebel Zabdara, Emeralds have been mined for from time immemorial, these being probably the earliest known Emerald mines in the world. The Emeralds of Egypt have often been mentioned with high praise. Cleopatra gave, as presents to ambassadors, portraits of herself engraved on Emeralds, and the stones during her reign appear to have been considered as strictly royal property. The value of an Emerald depends greatly upon its colour and freedom from flaws; a very fine dark velvety coloured stone, free from flaws, is seldom Perhaps there is no stone which suffers more than the Emerald from inequality of structure, colour and transparency, and from clouds and spots.

Compositio	N		284	(12)	Silica Alumina Glucina, &c.	68 18 14	
						100	
Specific G	RAVITY	111	-41	Yes	2.7.		
HARDNESS			***	***	7.5.		
System	10.0	14.4	17.4	200	Hexagonal.		
FORM	***		***	277	Hexagonal prisms, var		di-hexagonal y modified.



# THE ORIENTAL CAT'S-EYE.

UCH confusion exists concerning this very curious and valuable gem, a confusion arising partly from the ignorance of many in the trade as to its true nature, but principally from the mistakes of those who have written about it. In mineralogical treatises it is often confounded with, and described as, a peculiar variety of quartz, which somewhat resembles it, but which is of little or no mercantile value, although it has occasionally been sent to Europe by unscrupulous merchants as the true Cat's-Eve. This chatoyant quartz is found largely in Ceylon and on the West Coast of India. A greenish variety is found near Hof, in Bavaria, and is largely cut as an ornamental stone. The quartz Cat's-Eye is semi-transparent, and when cut in a convex form (en cabochon) shows a more or less defined band of light, with a silky lustre, resulting from a reflection of the fibrous grain of the stone itself, or more probably from an intimate admixture of asbestos, which penetrates the quartz in delicate parallel fibres. The true or Oriental Cat's-Eye is a rare variety of the Chrysoberyl, or Cymophane, a stone of extreme hardness, in this respect being only inferior to the Diamond and the Sapphire. It is characterised by possessing a remarkable play of light in a certain direction, resulting, it is supposed, from a peculiarity in itsinternal structure, which appears to be minutely striated. This ray of light or "line" as it is termed by jewellers, shines in fine and well-polished specimens with a phosphorescent lustre. The true Cat's-Eye (Chrysoberyl) comes principally from Ceylon, where it is found in company with Sapphires, Zircons, and other gem-stones. It is of various colours, ranging from palestraw colour through all shades of brown, and from very pale apple-green to the deepest olive. Some specimens are almost black. The line, no matter what ground-colour the stone may possess, is nearly always white, and more or less iridescent; occasionally, but very rarely, however, the line is of a goldenhue. This lustre is most beautiful when seen in full sunlight

or by gas-light, when the lines become more defined and vivid. This gem is valued principally according to the perfection and brilliancy of the luminous line, which should be sharp and welldefined, not very broad, and should run evenly from end to end across the middle of the stone. The colour does not much influence the value, some jewellers preferring one tint and some On the whole, perhaps, the most popular colours are the clear apple-green and dark olive; both of these form a splendid background and contrast well with the line. A great deal of so-called Cat's-Eye was, some few years back, brought from South Africa, and, mounted as jewellery in various forms, was sold as African Cat's-Eye; it is, however merely a fibrous form of quartz, known generally as "Crocidolite." This African Cat's-Eye, or Crocidolite, has been brought from Griqualand in masses of sufficient size to be made into snuff boxes and other ornamental objects; while slabs of the stone have been used as veneer to cover the tops of small tables.

It will have been gathered from the foregoing remarks that no fewer than four different stones are known under the name of Cat's-Eye, namely:—

- (1) The fibrous variety of Chrysoberyl.
- (2) The chatoyant quartz from India.
- (3) The green asbestiferous variety from Bavaria.
- (4) The brown "Crocidolite" from South Africa.

But it must be borne in mind that the only one as a gem of real value is that which has been described above as the true or Oriental Cat's-Eye—a fibrous variety of Chrysoberyl—far surpassing in hardness and beauty any of its namesakes.

Composit	ION	***	144	***	***	Alumina Glucina	***	80 20
Specific	GDAV	inv			***	3.8.		100
		111	* * *	2.77	4			
HARDNESS				10.00	344	8.5.		
System	100	14.41	141			Trimetric.		
FORM	144		1.11	13.1	***	Usually as	rolle	d crystals.

# THE OPAL.

ICOLS in his curious old book entitled "A Lapidary," written two centuries and a half ago, gives a quaint description of this lovely stone. He says: "The Opal is a Precious Stone which hath in it the bright, fiery flame of the Carbuncle, the fine, refulgent purple of an Amethyst, and a whole sea of the Emerald's green glory; and every one of them shining with an incredible mixture and very much pleasure." In all notices of the Opal, prominence is naturally given to the brilliant play of rainbow tints which renders this stone unique. Although possessing no colour which can properly be called its own, it exhibits flashes of the most vivid hues. This is probably the result of the number of fissures which traverse it, the light being decomposed by the delicate striations on the walls of these microscopic crevices, thus giving rise to the optical phenomena known as "diffraction." In some varieties the colours are more or less evenly distributed, and one set of shades will predominate in one part of the stone, and other colours in another part; or the distinct tints will run in parallel bands. In other specimens the colours are made up of small regular angular patches of every hue, and these polychromatic stones are known as Harlequin Opals.

The Opal is a non-crystalline mineral. When first taken out of the earth it is not very hard, but subsequently by exposure to the air its hardness is increased; nevertheless, it always remains a soft stone compared with other gems.

Several kinds of Opal are known to the mineralogist. Most of it is destitute of brilliancy, and hence useless to the jeweller. This is known as common Opal. Other specimens present translucency, but no colour; these are distinguished as Semi-Opal. Certain Opals from Zimapan, in Mexico, possess a bright orange-red tint, and are used to a limited extent as an ornamental stone under the name of Fire-Opal. The Precious Opal, used in bijouterie, was formerly obtained almost exclusively from Hungary, the mountain range where it was found consisting mainly of a kind of trachytic rock, or porphyritic andesite. The two highest mountains of this range are Simonka

and Libanka, and it is from these that the Precious Opal came, especially from Dubrick. There seems no doubt that the Opal mass, originally in a liquid or gelatinous condition, filled up the cavities in the trachyte veins, and was gradually solidified. The Mexican Opal occurs at several localities, and is also found in Honduras, in the Department of Gracias, and in Guatemala. Most of this Central American Opal is more transparent and less fiery than that from Hungary, and with the exception of a few isolated specimens is considered of but little value. Of late years large quantities of Precious Opal have been found in Queensland and also in New South Wales, occurring principally in thin veins in brown ironstone. Owing to the exhaustion of the Hungarian mines, Australia has now become the principal source from which jewellers obtain this beautiful stone; it is somewhat of a more transparent character than the Hungarian Opal, but many of the finer pieces equal in beauty and brilliancy of colouring the choicest specimens from Hungary. It is well-known that there are innumerable superstitions attached to the Opal. By the ancients it was thought to bestow every possible good. In the Middle Ages the same belief was held; but by a strange freak of fashion the Opal lost its pristine glory, and for a long time has been falsely accused of bringing ill-luck-a bad reputation which the author is glad to say is now almost entirely removed. Sir Walter Scott is said to be in a great measure answerable for this, as readers of Anne of Geierstein know. The Opal is a favourite stone with the Queen, the German Royal Family, and with many of our aristocracy. The Americans have also of late years shown a marked partiality for the stone, thousands of carats of the finest stones having been purchased for their market.

Compositi	ON	+ 4.5	+++	***	Silica, with 10 to 12 per cent. Water.
Specific (	GRAV	TTY	10.00	444	2 to 2.2.
HARDNESS		***	2.00	9.00	5.5 to 6.
FORM	111	222	1811		Amorphous.



# THE ALEXANDRITE.

HIS stone, which was named after the late Czar of Russia, having been discovered on the birthday of Alexander I., owes its celebrity to its prominent hues of red and green. The Russian Alexandrite can rarely be shown to the best advantage in consequence of its radical defects of structure. The variety found in Ceylon is more easy of manipulation.

Alexandrite is especially remarkable for its strongly-marked difference of colour, according as it is viewed by natural or by artificial light. The finest stones present a bright green, or deep olive-green colour, by daylight; whereas at night artificial light, such as that of gas or a candle, brings out a soft columbine red or raspberry tint. The Alexandrite is strongly dichroic, while some varieties are even trichroic.

Chemical analysis shows that the Alexandrite is a variety of Chrysoberyl. The author has seen in the course of his experience two or three stones with a perfect Cat's-Eye line, yet subject to the characteristic change of colour by artificial light; such stones are called Alexandrite Cat's-Eyes. In order to display the line of light, it is necessary to cut the stone *en cabochon* instead of facetting it. The original Alexandrite came from the Ural Mountains only in small quantities; but the principal supply now is obtained from Ceylon, where, however, it is far from plentiful. The market value of this stone is extremely variable.

COMPOSITION-									
Alumina	22.					44. 1	49.5	79	
Glucina	***					141	444	18	
Iron and C	hromic		&c.	911			222	3	
								100	
SPECIFIC GRAV	TTY			211	+++	3.7.			
HARDNESS	***	***		999	***	8.5.			
System of CR	YSTALL	IZATION	٧			Trimet	ric.		
FORM OF CRYS	TAL				111	Usually	six-	sided	twins.



THESE DESIGNS ARE DRAWN TO ACTUAL SIZE, AND PRICES ARE QUOTED NET; SMALLER ORNAMENTS OF SAME DESIGN CAN BE HAD, OR ANY GEM SUBSTITUTED FOR THOSE ABOVE AT PROPORTIONATE PRICES.

## THE FIVE GUINEA JEWEL PAGE.



ALL STONES SET " À JOUR,"



1423.	Sapphire and Diamond Double Heart and Coronet Brooch				1432.	Jade Shamrock and Diamond Heart	e10 10	0
1424.	Green Enamel and Diamond Brooch,	210	10	O.	1433.	Pendant Turquoise Three-Stone Ring	10 10	0
	Crystal Centre (any color enamel)	10	10	0	1434.	Sapphire and Diamond Fancy Half-		
1425.	Diamond Tie Brooch	10	10	0		Hoop Bracelet	10 10	0
1426.	Diamond Fancy Heart Brocch	10	10	0	1435.	Diamond Trefoil Ring	10 10	()
1427.	Pearl and Diamond Brooch	10	10	0	1436.	Cabochon Ruby and Diamond Heart		
1428.	Turquoise and Diamond on Gold Curb					Ring	10 10	0
	Bracelet				1437.	Opal and Diamond Double-Part		
1429.	Opal and Diamond Heart Pendant	10	10	0		Ring		0
1430.	Opal and Diamond Fancy Pendant	10	10	0	1438.	Ruby and Diamond Bangle Ring	10 10	0
1431.	Sapphires and Diamonds on Gold Curb				1439.	Opal and Diamond Cluster Bracelet	10 10	0
	Bracelet				1440.	Opal and Diamond Marquise Ring	10 10	0

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#### THE THIRTY GUINEA JEWEL PAGE.







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1404

#### SPORTING MODELS, Mounted in Diamonds.

ALL STONES SET " À TOUR." 1495 1497 1500 1502 (Any Colors Enamelled to order). 1503 1504 1505 1508 1507 1509 Diamond Pomeranian Dog Brooch
Diamond Horse's Head Brooch
Diamond Hackney Breoch
Diamond Black-Cock Brooch
Diamond and Enamel Hansom Cab Brooch
Diamond Seipe Brooch
Diamond Horse and Enamel Jokey Brooch
Diamond Horse and Enamel Jokey Brooch
Diamond Gat Brooch
Diamond Horse and Enamel Jokey Brooch
Diamond Running Fox Brooch
Diamond Running Fox Brooch
Diamond Phessant Brooch
Diamond Otter Brooch
Diamond Otter Brooch
Diamond Otter Brooch
Diamond Hare Brooch 1495. 1496. £25 0 0 90 0 0 0 25 0 0 30 0 0 12 0 0 15 0 0 40 0 0 1498. 1499. 150L 15 0 40 0 40 0 22 0 41 10 30 0 17 0 35 0 1502, 1503. 1505. 1506. 1507. 1509.

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THESE PESIGNS ARE DRAWN TO ACTUAL SIZE, AND PRICES ARE QUOTED NET; SMALLER ORNAMENTS OF SAME DESIGN CAN BE HAD, OR ANY GEM SUBSTITUTED FOR THOSE ABOVE AT PROPORTIONATE PRICES.

#### GEM BRACELETS.

ALL STONES SET " A JOUR."



THESE DESIGNS ARE DRAWN TO ACTUAL SIZE, AND PRICES ARE QUOTED NET; SMALLER ORNAMENTS OF SAME DESIGN CAN BE HAD, OR ANY GEM SUBSTITUTED FOR THOSE ABOVE AT PROPORTIONATE PRICES.

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STREETER & CO., Ltd.

ALL STONES SET " À JOUR."

















1532.	Pearl and Diamond Fancy Flexible on Gold Curb Bo	racelet		444		£60	0	0	
1533.	Fancy Enamel and Diamond Flexible Bracelet		444	1000		40	0	0	
1534.	Sapphire and Diamond Flexible on Gold Curb Brace	elet	111	757	***	45	0	0	
	Pearl and Diamond alternate on Gold Curb Bracelet		***		***	35	0	0	
1536.	Fancy Enamel and Diamond Flexible Bracelet			***	***	35	0	0	
1537.	All Diamond Flexible Bracelet		***	***	***	100	0	0	
1538.	Ruby and Diamond Flexible Bracelet		***	***		75	0	0	
1539.	All Diamond Flexible Collet Bracelet	444	***			195	0	0	
	Pearl and Diamond Collet on Gold Curb Bracelet					65	0	0	

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#### DIAMOND PENDANTS.



THESE DESIGNS ARE DRAWN TO ACTUAL SIZE, AND PRICES ARE QUOTED NET; SMALLER GRNAMENTS OF SAME DESIGN CAN BE HAD, OR ANY GEM SUBSTITUTED FOR THOSE ABOVE AT PROPORTIONATE PRICES.





1550. 1551. Fine Diamond Riviere Necklaces, from £100 upwards, according to Size. 1553. 1554.

1555. 1556. 1557. Diamond Earrings, from £20 upwards, according to Size and Design.

Pair Turquoise and Diamond Cluster Earrings Pair Pearl and Diamond Cluster Earrings ... Pair Sapphire and Diamond Cluster Earrings 1558. 1559. 1560.

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#### DIAMOND TIARAS.

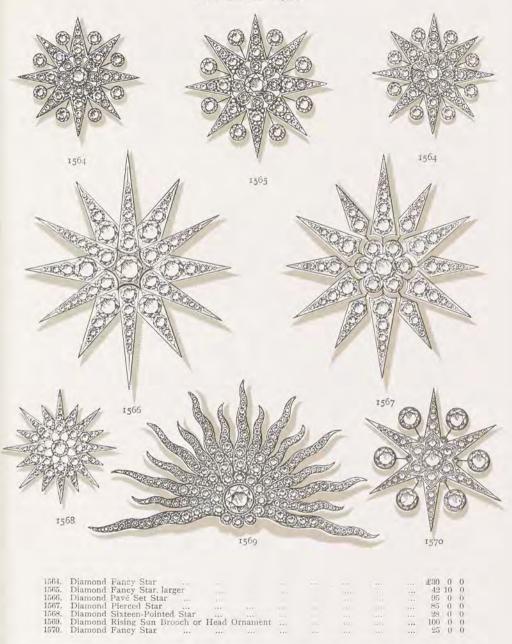
ALL STONES SET " A JOUR,"



	All Diamond Tiara, and to form Necklace	100	***		124	111	£285	0	0
1562.	All Diamond Tiara, and to form Necklace	411	124		444	***	265	0	0.
1563.	Turquoise and Diamond Tiara, and to form Nec	klace		100			320	.0	0

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ALL STONES SET " i JOUR."



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#### DIAMOND COMBS AND HEAD ORNAMENTS.



1571.	Diamond Wings' Ornament, to form one or two Brooches or Comb	- 10		£120	0		
1572.	Diamond Sword Hair-Pin or Dress Ornament, with Diamond Clasp		***	175	0	Ó.	
1573.	Pearl and Diamond Sword Ornament, with Diamond Sheath		sin.	50	0	0	
1574.	Diamond and Tortoiseshell Comb			18	0	0	
1575.	Diamond and Tortoiseshell Comb			37	0	0	

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#### FINE GEM RINGS.

ALL STONES SET " à JOUR,"



Emerald and Diamond Rings, All Diamond Rings, Pearl and Diamond Rings, Sapphire and Diamond Rings,

from £40 to £200.

from £20 to £150.

from £12 to £200

from £15 to £150.

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ALL STONES SET ' A JOUR."



Single Stone Diamond Rirgs. Ruby and Diamond Rings, Turquoise & Diamond Rings, Opal and Diamond Rings, from £10 to £135. from £20 to £250. from £12 to £80. from £12 to £70.

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#### LINKS, WAISTCOAT BUTTONS AND STUDS.

ALL STONES SET " à lour."



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ALL STONES SET " à JOUR."



1680. Gold and Enamel Links, Sporting Subjects. £13 to 0 1650. Opal and Diam'd Cluster Stud, and to form Pin 1681. Gold Hunting Links or Buttons . 5 0 0 1650. Opal and Diamond Cluster Stud, and to 1682. Gold Hunting Links or Buttons . 5 0 0 1693. Gold and Enamel Links, Yeething Subjects . 1 0 1694. Gold and Enamel Links, Yeething Subjects . 1 0 1694. Gold and Enamel Links, Yeething Subjects . 1 0 1695. Turquoise and Gold Gipsy Set Links . 2 10 0 1695. Turquoise and Gold Gipsy Set Links . 2 10 0 1695. Turquoise and Diamond Cluster Links . 2 10 0 1695. Turquoise and Diamond Cluster Links . 2 10 0 1695. Turquoise and Diamond Cluster Links . 2 10 0 1695. Set of Three Biask Pearl and Diamond Cluster Stud, and to 1694. Set of Three Biask Pearl and Diamond Cluster Stud . 3 10 1694. Set of Three White Pearl Shirt Studs . 3 10 1695. Set of Three Pearl Gipsy Set Studs . 3 10 1695. Set of Thr Gold and Enamel Links, Sporting Subjects
Gold Hunting Links or Buttons
Gold Hunting Links or Buttons
Gold and Enamel Links, Yachting Subjects
Gold and Enamel "Ruination" Links
Turquoise and Gold Gipsy Set Links
Turquoise and Dlamond Oval Cluster Links.
Turquoise and Dlamond Oval Cluster Links
Turquoise and Dlamond Cluster Stud, and to
form Pin
Ruby and Dlamond Cluster Stud, and to
form Pin
FSE DESIGNS ARE DRAWN TO ACTUAL SE



Gent's English Keyless Lever Watches, Brequet Sprung, Compensated for Temperatures and Fositions, in 18-Carat Gold Extra Heavy Hunting and Half-Hunting Cases, or with Crystal Face, from  $\pm 20$ .

In Silver Cases, from £8.

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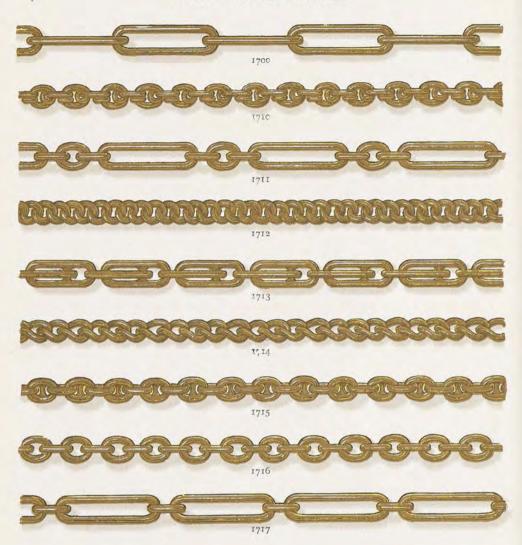


Ladies' English Keyless Lever Watches, Brequet Sprung, Compensated for Temperatures and Positions, in 18-Carat Gold Extra Heavy Hunting and Half-Hunting Cases, or with Crystal Face, from £15.

In Silver Cases, from £6 15s.

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18, NEW BOND STREET, W.



18-Carat Gold Albert and Pocket to Pocket Chains, from £5, according to Size

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1718.	Gold Dog Link or any Pattern Muff Chain, from				£6	5	0
	Gold Oval Link Muff Chain, with Amethyst and Rondelle Beads				10	10	0
	Gold Oval Link Muff Chain, with alternate Pearls and Diamonds		414		18	18	0
	Fancy Muff Chain, with alternate Enamel Bars and Pearls		***		22		
	Gold Jack Pattern Muff Chain with Pearls		***	***		10	
1723.	Gold Prince of Wales' Pattern Muff Chain, with Sapphire and Pe	earl	Beads	***	18	0	0

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# Theraldry.

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ESSRS. STREETER & CO. having made a special study of Heraldry in all its branches, are enabled to guarantee the correctness of all Armorial bearings with the execution of which they are charged.

They have determined to form a special department in order to supervise the correct marshalling and colouring of Arms, which is under the control of Captain F. Manners, one of their Directors, who has for years made Heraldry his study.

All branches of this difficult science are included, the Royal Arms (so seldom properly represented), the Badges of Regiments and the Arms of the various Counties and Corporations are given special attention.

Messrs. Streeter will be glad to furnish Heraldic designs for all purposes—for stained glass windows, internal decorations, carpets, wall papers, note paper, bridesmaids' presents, book-plates, pedigrees, plate, jewellery, flags, fans, ash trays, carriage panels, seals, illuminated addresses, blotting books, or any other purpose.

Their object is to give the public an opportunity of obtaining correct Heraldry without the great expense of referring to the College of Arms on every minor point, feeling sure that their customers will appreciate the advantage of being able to confidently rely on their staff for the strictest accuracy in every detail.

An inspection of their designs is invited in the Museum at 18, New Bond Street.



## THE HARDNESS OF GEMS.

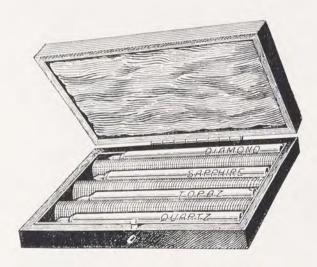
O this property we are indebted for the durability of lustre enjoyed by the gems, in proportion so immensely superior to that of every other natural or artificial product employed as personal ornaments. The lustre of the Diamond may be closely imitated by art; but the hardness of this stone is a character that defies imitation.

An Austrian mineralogist named Mohs, many years ago suggested a scale of hardness for testing of minerals, which is generally used by mineralogists. At the head of his scale stands the Diamond, and the various degrees are ranged as follows:—

- 10, DIAMOND;
- 9, SAPPHIRE;
- 8, TOPAZ;
- 7, QUARTZ;
- 6, FELSPAR;
- 5, APATITE;
- 4, FLUORSPAR;
- 3, CALCITE;
- 2, GYPSUM;
- 1, TALC.

To ascertain the hardness of a stone, it is rubbed over an edge of another stone of known hardness. If it scratches, say No 7, but is scratched by No. 8, its hardness will lie between the two numbers. If it neither scratches nor is scratched by it, the two are identical in degree of hardness. Simple as the test seems to be, it requires considerable skill in some cases to obtain satisfactory results.

To the student of Precious Stones, it is only the first four degrees of hardness that are of interest. It is convenient to have representatives of these mounted in tubes, or handles, for ready use. The Diamond (No. 10) scratches every other stone. The Sapphire (No. 9) stands next in hardness to the Diamond, and scratches all inferior stones. The Topaz (No. 8) and the Rock Crystal (No. 7) are the only other minerals likely to be of service. These useful tests are to be obtained of Messrs. Streeter & Co., Ltd., in case complete, as illustrated, of a convenient size to be carried in the waistcoat pocket. Price 21/-



POCKET CASE OF STONE TESTS (Actual Size.)

#### PEARLS

"Some asked how Pearls did grow—and where?
Then spoke I to my girl;
To part her lips, and showed them there—
The quarelets of Pearl."
ROBERT HERRICK.

O many difficulties surround the study of the formation of Pearls that it is by no means surprising that a host of conjectures, often of a very fanciful and even wild character, have from time to time been promulgated with the view of explaining the origin of these enigmatical little bodies.

For a long time it was currently believed that Pearls were found only in diseased shell-fish. The prevailing idea, however, among scientific men at present is, that the formation of Pearls is caused by an effort of the oyster to rid itself of irritation caused by the presence of some foreign body which has found entrance from without.

The nucleus of the Pearl may be either a grain of sand or the frustule of one of those minute siliceous vegetables known as diatoms, or a minute parasite, or even one of the ova of the Pearl oyster itself. Around this foreign body thin layers of nacre are deposited, one after another, like the successive skins of an onion, until the object is completely encysted. The Pearl is formed of concentric layers of carbonate of lime, of extreme tenuity, but of the same general character as those composing the shell, excepting that the latter has more organic matter in it.

The finest Pearls are found within the mantle of the mollusc, close to the lips of the shell, or in the soft part of the oyster near the hinge of the shell. The worst Pearls are those found within the close, coarse fibres of the adductor muscle. At intervals they are found loose in the shell outside the body of the oyster, and consequently are very often washed out of the shell and lost. Lastly, Pearls are frequently found embedded more or less deeply in the shell, having in some cases escaped from the soft tissues.

When a Pearl taken from the shell presents a hemispherical surface it is called a Pearl bouton; such a Pearl is flat on one side and rounded or convex on the other. If a solid Pearl has an irregular shape, having grown over a rough object, it is known

as a baroque Pearl.

The chief localities for Pearls are the Sooloo Archipelago, on the north side of Borneo—where many of the finest Pearls are to be found—West Australia, Torres Strait, Gulf of Panama and the Persian Gulf. At the latter place Pearl fishing has been carried on from time immemorial, but the natives along the coast are so treacherous and fierce that, without Government protection, which cannot be obtained, it is impossible for Europeans to work in safety. Ceylon produces fine Pearls, but they are almost invariably smaller than an ordinary pea.

Composition (from the oyster found in Australian and Ceylonese fisheries)

Identical in a sample from each fishery:—

Carbon	nate o	f lime	150				91.72	per cent
Organi	e mat	tter	212	444	412	2	5.94	**
Water	***	442	250	222			2.23	.,,
Loss	***	14.0	100	+++		121	.11	12

## THE TURQUOISE.

HE Turquoise is a hard gem, of no transparency, yet full of beauty; its colour is sky-blue, out of a green. in which may be imagined a little milkish infusion. A clear sky, free from all clouds, will most excellently discover the beauty of a true Turquoise. gem is throughout of the same beauty, as well internally as externally, its exquisite colour being no doubt due to the presence of a certain quantity of phosphate of copper. The Turquoise does not occur crystallized, but is found only in a compact form, having no cleavage, but possessing a conchoidal fracture. Chemically, it is a phosphate of alumina, in a hydrated condition. The Shah of Persia has long been credited with the possession of the finest Turquoises in existence, for Nishapur, in Khorassan, the locality from whence the most precious of these stones is obtained, is within his dominions; and it is said the best Turquoise was invariably picked out and retained by him. The Orientals cut texts from the Koran on Turquoise and fill in the characters with gold. Discoveries in the land of Midian have shown that three Turquoise mines exist there, but all the stones soon lose their colour. It is known that Turquoise was extensively worked by the ancient Mexicans previously to the discovery of America, the stone being highly esteemed for personal ornaments and for the temple of the gods. Turquoise of a green colour is also found in Cochise County, Arizona, at a locality known as Turquoise Mountain, and at a few localities in Nevada and California. It has also recently been found in great quantities in Victoria.

CHEMICAL	Composi	TION :	-			
	Phosphor	ous p	entoxi	de		32.8
	Alumina	***	111	344	***	40.2
	Water			***		19.2
	Copper o	xide				5.3
	Iron and	Mang	ganese	oxides		2.5
						100.0
HARDNESS			1000	+++	6.	
SPECIFIC C	GRAVITY				2.75.	
FORM	4.74	***	***	***	Amo	rphous

# SEMI-PRECIOUS STONES

(Alphabetically arranged).

## THE AGATE.

Y the term Agate, the mineralogist understands a composite substance, an association of certain siliceous or quartz-like minerals, which in texture, in colour, and in transparency are diverse one from another. The Agate-forming minerals are chiefly Chalcedony, Carnelian, Jasper, Quartz, and Amethyst. Two or more of these, forming a variegated stone, and usually presenting a diversity of spots and stripes, may be denominated an Agate. The Agate is eccasionally found in veins, as in certain localities in Saxony and Bohemia; although very fine Agates are found in India, our chief supply is derived from South America.

CHEMICAL C	SITI	ON	100	ra e	Silica.	
HARDNESS			244	521	122	7.
Specific Gravity						2.6.
FORM			+ + +	0,0	110	Amorphous and nodular.

## AMBER.

MBER is a fossil resin, and its external condition, as well as its chemical composition, points to its vegetable origin. It is non-crystalline, translucent, and somewhat brittle, having a specific gravity as nearly as possible the same as that of sea-water. It becomes electrical by friction. Amber was much valued by the ancients, particularly by the Romans. It was at one period far more valuable than gold, and although of late years it has been seldom worn as a gem, quite recently there has been a great demand for it in the shape of cigarette cases, match boxes, bonbonières, etc., and it seems probable that it is destined to be restored once more to favour.

Composi	TION	**+			Carbon, Hydrogen, and Oxygen.
SPECIFIC	GRAV	TTY			1.08.
HARDNE	SS			1.64	2.5.
FORM		100	-+-	10.00	Amorphous, occurring as nodules.

#### THE AMETHYST.

HIS term is now applied to all the violet and purple crystals of quartz, which, when fractured, present the peculiar rippled or undulated structure described by Sir David Brewster. The stone called Oriental Amethyst is strictly a variety of Sapphire, of violet colour, but the term is applied commercially to any Amethyst of exceptional beauty. Amethyst is a variety of quartz containing traces of oxide of manganese, to which the violet colour of the stone is attributed. Brazil, Uruguay, and Siberia furnish us with the best specimens, but the stone is found in nearly all parts of the world.

Composition		 Silica, coloured by oxide of manganese.
SPECIFIC GRAVITY		 2.6.
HARDNESS		
System of Crysta		
FORMS OF CRYSTAL	S	 Generally six-sided pyramids and prisms.

# THE AQUAMARINE, or BERYL.

QUAMARINE is a name given to those varieties of Beryl which possess a pale-green colour, suggestive of sea-water. In fact the Beryl, Aquamarine, and Emerald are all united by mineralogists under the head of a single specie, inasmuch as they are found to agree in crystallographic and chemical characters, while they differ mainly in colour. Most of the Aquamarine comes to us from Brazil, but the stones are also found elsewhere, viz.:—In the granite regions of the Ural Mountains, and in Siberia, France, Bavaria, Saxony, Bohemia, in some parts of the United States and in New South Wales.

COMPOSITION:	_				
		***		66.8	
	Alumina	a	***	19.1	
	Glucina		***	14.1	
				100.0	
SPECIFIC GRA	VITY	444	100	2.7.	
HARDNESS		***	121	7.5.	
SYSTEM OF CE	RYSTALLI	ROLLY			Hexagonal.
FORMS OF CR	YSTALS			4.4	Six-sided prisms.

#### THE BLOODSTONE.

LOODSTONE is a variety of Jasper, of a deep green colour, interspersed with red spots, which resemble small drops of blood, whence its name. Bloodstone, although a beautiful material, is not much used for ornamental purposes, except for signet rings. Being a rather hard stone, and yet not difficult of manipulation, it is a favourite with engravers, and hence crests and monograms are frequently engraved upon it. Cups and other ornamental objects of small size are also fashioned from it.

'OMPOS	SITION	ore	***	Silica, with a small peroxide of iron.	percentage	of
SPECIF	ic Gra	VITY		2.6.		
HARDN	ESS		***	7.		
FORM	***	***		Amorphous.		

## THE CARNELIAN.

ARNELIAN is nothing more than a pale red variety of Chalcedony, itself a form of quartz, characterised by its translucency, or semi-opacity, and by an entire absence of crystalline texture. It is chiefly found in nodular masses and in the interior of Agates. Its colour varies from blood-red to wax-yellow, and reddish-brown. It is cloudy, seldom striated, semi-transparent, and of waxy lustre. Carnelian is used for rings, seals, beads, etc., and also cameo work and engraving.

Composition	222	999	222	Silica, with oxide of iron.
Specific Grav	TITY			2.6
HARDNESS		***	14.44	7.
FORM			111	Amorphous.

#### THE CHRYSOBERYL.

HERE is probably no stone the composition of which has been given with so much variation as this. The true Chrysoberyl, as known to us to-day, is essentially a compound of alumina and glucina, with varying proportions of oxide of iron. There are three varieties of this stone, the Chrysoberyl, the Cymophane or true Oriental Cat's-Eye, and the Alexandrite. Its colours range from light asparagus green, golden yellow, brownish yellow, and golden brown, to columbine red. It is found principally in Ceylon, Brazil, Borneo, and Burmah. Of late years it has also been found in some parts of the United States.

Composition—							
Alumina	+4+	444					78
Glucina							18
Ferrous Oxide		100		2.0		***	4
SPECIFIC GRAVITY			3.5 to 3	3.8.			100
HARDNESS		***	8.5				
CRYSTALLINE SYSTEM			Trimet	ric or	ortho-ri	hombic	
FORM	**+	24.5	Flat pr	isms, g	enerally	as rol	led pebbles.

## THE CHRYSOPRASE.

HE true Chrysoprase is a green variety of Chalcedony, of extreme local occurrence. It is found in Silesia, not far from Frankenstein. It occurs in veins of serpentine, in company with other siliceous minerals, such as Quartz, Chalcedony, and Opal. Among the semi-precious stones, the Chrysoprase deserves to be one of the greatest favourites. It possesses a beautiful apple-green colour of many shades, and a transparency and capability of high polish. A few seasons ago it sprang suddenly into great favour, and the demand was so great that an immense quantity of stained Agate was put upon the market and sold as true Chrysoprase.

Compositio Silica .		***		444	1994	244		97.5
Oxide o	of Nickel	, &c.	111	***	12.50	***	100	2.5
								100.0
SPECIFIC G	RAVITY	ter-	+ + -			15.	2.6	
HARDNESS							7	
FORM .	44 1969	***	+++	6.6.4.			Amo	rphous.

# THE GARNET, CARBUNCLE, AND CINNAMON STONE.

NDER the general name of Garnet, the mineralogist includes a number of stones which present a great variety of colour. On glancing at the various analyses of different Garnets, one might fail to recognise their relationship; but the chemist is aware that these changes of composition take place according to certain definite laws, without violating the general type on which they are constructed. The principal varieties recognised by mineralogists are the Almandine or Precious Garnet; the Essonite, or "Jacinth" and "Hyacinth"; the Pyrope, or Bohemian bloodred Garnet; and the Uwarowite, or green Garnet. These all differ slightly in composition, specific gravity, hardness, etc.

CHEMICAL COME	POSITIO	N-						
Silica	***		111		4.4	111	444	36.5
Alumina	***				4.54.	14.2	***	21.0
Iron Oxides					***			34.5
Magnesia	***	***	399	124	4.64	4.44	9.19	4.0
Lime			10.00	0.71	1.19	30.6	***	3.0
Manganese	Oxide	3.5	***			1.0	946	1.0
Specific Gravi	гү			3.5 to	4.3.			100.0
HARDNESS				Abou	t 7.			
CRYSTALLINE SY	STEM		***	Cubic	3.			
FORMS	***	244	1.00		abic, de		edron	and 24-face

## THE HIDDENITE.

HE Hiddenite is a comparatively little known gem-stone, having been discovered only a few years ago in North Carolina, by Mr. W. E. Hidden, after whom it was named. In appearance it is something like the Emerald, both in its rough and cut states. It is of a brilliant green hue, verging towards yellow, and possesses a beauty of its own. It is a variety of the mineral called Spodumene.

Composition	244	414	A silicate of Aluminium and Lithium,
Specific Gravity	942		3.
HARDNESS			7.
CRYSTALLINE SYSTEM			Monoclinic.
FORM	344		Prismatic Crystals.

#### THE IOLITE.

NDER the name of Iolite or Dichroite the mineralogist is familiar with a certain stone which is remarkable for its pleochroism, or difference of tint when viewed in different directions. Occasionally it is cut and polished as a gem-stone, and is known to the jeweller as "water Sapphire." The best specimens come from Ceylon, those from Bavaria being almost opaque. The usual colours are various shades of blue and violet.

Снемі	CAL CON	IPOSIT	ION-						
Sil	lica		***		1	***		***	49
Al	umina			22.5	***	***	444		34
M:	agnesia			***	***	***			9
Fe	errous ox	ide	***	***		***			8
System	of Cr	YSTALL	IZATIO	N		Trimetr	ric.		100
SPECIF	ic Grav	TTY				2.6			
HARDN	ESS	***				7.			
FORM	***		121	***		Prismat	ic Crys	stals, o	r as pebbles

## JADE.

RUE Jade is known to mineralogists as Nephrite. It is a compact variety of hornblende, consisting of a silicate of magnesium and calcium. The Chinese have for ages worked this stone into most elaborate and delicate forms. It was also used by the Maories, or natives of New Zealand. It is also found in New Caledonia, Turkestan, Burmah, and a few other localities, in limited quantity.

Снеми	CAL CO	MPOS	ITION-						
Sil	ica	100		h (r. n.)				112	57.75
Ma	gnesia						***		19.86
Lin	ne	***				***	4.0		14.89
Ox	ide of	Iron,	Alumina,	&c.	***	24.5	1910	111	7.50
Specifi	c Gra	VITY	4.4	444		2.9 to	3.18		100.00
HARDN	ESS					6.5			
FORM	141		444	222		Amor	phous;	occu	rring as a rock.

## JASPER.

Y modern mineralogists the term Jasper is restricted to the opaque varieties of Quartz which present a compact texture, and are destitute of any crystalline structure. Jasper is commonly found in compact masses of kidney shape or as pebbles. Its colours are green, yellow-brown, and red of various shades, rarely blue. Red Jasper is found in Breslau, and in numerous other localities. Common Jasper in the old rocks of North Wales and Scotland. Striped Jasper in Siberia, Sicily, Corsica, the Hartz, and Tyrol.

CHEMICAL C	OMPOSIT	rion -						
Silica	***		0.00					99.5
Oxide o	f Iron		***			257		.5
Specific Gr	RAVITY			-	120	2.6		100.0
HARDNESS	***		***			7.		
FORM			144	***		Amor	phous.	

#### LABRADOR.

HIS stone, found principally in the Peninsular of Labrador, from whence it takes its name, belongs to the great family of felspars. Generally speaking the body colour is a dull grey, brown, or greenish brown; but typical specimens of the mineral possess a remarkable iridescent chatoyancy, or internal reflection of prismatic hues, especially bright blue and green, with more or less golden yellow, peach colour, and red. From its remarkable play of colour it has become a great favourite with many connoisseurs, and is much used for cameos.

Composition	(Silic	ate of	alumin	ium, ca	leium	, and sod	lium)-	
Silica		***	141	***	+84	144		52.9
Alumina				***	100	***		29.3
Lime		***	***	+4.4	640	16.6.4		12.3
Soda, etc.	+11	***	14.64	+	***	177	122	5.5
SPECIFIC GRA	VITY			444		2.7		100.0
HARDNESS			***	***	771	6.		
CRYSTALLINE :	SYSTE	M	441			Triclinio	or A	northic.
FORM	***				1.4.4	Usually	in clea	avable masses.

#### LAPIS-LAZULI.

HIS stone is remarkable for its beautiful blue colour, which varies from pale to deep blue, with a tint of green; but is seldom quite pure, being often mottled with white and yellow spots. It is brittle, has but little lustre, and is translucent only at the corners or thin edges. Lapis-Lazuli is found in the Cordilleras, near the sources of the Cazadero and Vias; also in Siberia, in many provinces of China, in Bucharia, and on the banks of the Indus. The stone is used to a limited extent for rings, pins, crosses, etc., as well as for caskets, vases, statuettes, and handles for sticks and umbrellas.

COMPOSITION-	-							
Silica				***		2.2.4		45.5
Alumina	***			4.63	67.6	15.75		31.8
Soda		4.2						9.1
Lime			444		***			3.5
Iron							4.74	0.8
Sulphuric	acid							5.9
Sulphur		***	***			***	***	0.9
Chlorine								0.4
Water and	lloss			1			++1	2.1
Specific Gra	VITY			2.3 to	2.5.			100.0
HARDNESS				5.5.				
CRYSTALLINE :	SYSTEM			Isomet	ric or (	Cubic.		
FORM		***	***	Dodeca		n, but	very ra	are; generally

# THE MOONSTONE.

HE Moonstone is an opalescent variety of orthoclase-felspar termed Adularia—a name which it derives from Mount Adula, one of the highest peaks of St. Gothard, where it occurs. The best specimens, however, come from Ceylon. The pleasing lustre of this stone, somewhat like that of mother-of pearl, has led to its use by the jeweller. Some few seasons ago it found popular favour, too, from being reputed to bring good luck to its possessor.

Silica				4.7.5	970		111	64.7
Alumina	122	994		144		111	16.24	18.4
Potash	***	***	***	***	***	111	***	16.9
								100.0
CRYSTALLINE	System			4.4	***		Mono	clinic.
SPECIFIC GRA	VITY				***		2.5 to	2.6.
HARDNESS			+++				6.	
FORM	***			•••	•••			ue Prisms and avable masses.

#### ORIENTAL ONYX.

NYX is a very celebrated variety of tinted Agate having its colours arranged in parallel strata. The Oriental Onyx is obtained from India, Egypt, Arabia, and Armenia. The inferior variety mostly comes from Uruguay, Bavaria, and Bohemia. The Onyx has been chiefly used for cameos, the figure being carved out of the light colour and standing in relief on the dark ground. By modern mineralogists the term Onyx is restricted to an Agate-like substance, formed of alternating white and brown or black layers of Chalcedony. If the strata be alternately white and red, or reddish-brown, the resulting mixture is known as Sardonyx.

Composition		144	Silica, with traces of colouring matter.
SPECIFIC GRAVITY		345	2.6.
HARDNESS		143	7.
FORM	124	479.	Amorphous.

## THE PERIDOT, OR CHRYSOLITE.

HE Peridot has a very pleasing yellowish-green colour, and is susceptible of a fine polish, but it is so soft as to be easily scratched. It is remarkable that the Peridot occurs in "ærolites" or masses of meteoric stone. Mineralogists include the Chrysolite and the Peridot under the one species Olivine. The colours of Olivine vary from light straw yellow to yellowish green, when the stone receives the name of Chrysolite; and thence to a peculiar soft hue, of a delicate deep yellowish green, when it is called Peridot. It is found in the Levant, in Brazil, Mexico, Arizona, South Africa, and other countries, generally as small pebbles.

CHEMICAL COMPOS	ITION-	3					100 60
Silica	4.4.4		+ 2 4	1111			39.73
Magnesia	+ 4 +		444	++-			50.13
Ferrous oxide			***				9.19
Nickel oxide, 8	kc	1241	***	-+-	4.4.6	***	.95
SPECIFIC GRAVITY		40.0		3.35.			100.00
HARDNESS		120		6.5.			
CRYSTALLINE SYSTE				Trime	ric.		
FORM	avi			Genera	Ile in	vater-v	vorn pebbles

#### ROCK CRYSTAL.

OCK CRYSTAL is a pure and limpid form of quartz—a natural variety of silica. It is found in a variety of forms, sometimes of extraordinary size and beauty. Its colour varies from pure white to greyish-white, yellow-white, yellowish-brown, clove-brown, and black. According to its colour it receives a variety of names; thus the yellow is known as false topaz, the brown as cairngorm, and the black as morion. Rock Crystal is now principally used for cameos, intaglios, lenses, spectacles, etc.

Composition	-								
Oxygen	211					***			53.3
Silicon	***							225	46.7
Specific Gr	AVITY				2.65.				100.0
HARDNESS					7.				
CRYSTALLINE	Syst	EM	HER		Rho	mboh	edral.		
FORMS		121		• • •		ous si pyrai		prisms,	terminating

## THE TOPAZ.

NDER the general name of Topaz modern mineralogists include three distinct stones:—

(1) The true Topaz;

(2) The yellow Sapphire, or Oriental Topaz; and

(3) The Occidental, or false Topaz.

The second is a yellow variety of corundum, and the third is nothing but a variety of Scotch quartz. The true Topaz presents a variety of colours, from clear white, ranging through all shades of light blue and light green to rose pink, orange, and straw yellow. A pink colour is frequently obtained by subjecting the sherry-coloured Topazes to a moderate temperature. It is not uncommonly found in connection with ores of tin in all parts of the world.

CHEMICAL CO.	MPOSITI	ON-						
Alumina			***	***	***	444		30.2
Silicon	444	416					***	15.5
Oxygen		***	++-				***	36.8
Fluorine	***	***			***		***	17.5
Specific Gra	VITY		***	3.5.				100.0
HARDNESS				8.				
CRYSTALLINE	SYSTEM			Rhom	bic.			
FORM		***	***	two	ends	usual	ly dis	pyramids; th similar; wit leavage.

# THE TOURMALINE.

EW minerals present greater complexity of chemical constitution than the Tourmaline. Its colours consist of various shades of grey, yellow, blue, pink, and brown; all having a tendency towards the darker hues, even to black. It often happens that the colour is not constant throughout the stone, so that one part may be green while another portion of the same crystal may be decidedly pink. Tourmaline is found in Siberia, Ceylon, the Urals, Saxony, and the Isle of Elba. In the United States it has been discovered in great perfection and abundance.

Composition	(Very	comp	olicate	d and va	ried)-			
Silica					***			38.55
Alumina				***			66-	38.40
Boron Tr	ioxide	***		444	- 4.4	(B.A.+)	2.45	7.21
Ferric Ox	ide	***		4.4	1.77	416	99.1	5.13
Ferrous C	Oxide		444	516		***	2.15	2.00
Soda	***		171		4.4	***		2.37
Fluorine								2.09
Lithia	V112	- 11	-30	- 4+	100	101		1.20
Lime			9.63	***	24.1		-	1.14
Manganic	Oxide	***	200	63.9		7.4	217	0.81
Magnesia			2.53	110				0.73
Potash								0.37
SPECIFIC GRAVITY HARDNESS CRYSTALLINE SYSTEM		111	3.0 to 3.15. 7.5. Rhombohedral.				100,00	
13		27		Usually i		as stria	ted ve	rtically.

# THE ZIRCON, JARGOON, OR HYACINTH.

HE Zircon, Jargoon, and Hyacinth are all varieties of the same stone. The term Hyacinth or Jacinth is applied to transparent and bright-coloured varieties; and Jargoon to crystals of dull colour and of a smoky tinge. The Zircon is a lovely stone, the red and brown varieties being especially noteworthy. Some of the finest Jargoon present yellow, green and blue tints, not unlike those of the Tourmaline, but with much more fire and lustre.

CHEMICAL COM Silica			944			272		34
Zirconia	244			199.00		-03	District	66
SPECIFIC GRAV HARDNESS CRYSTALLINE S FORM	YSTEM	7.5. Tetr	agonal.		with	pyram	nidal 1	100

## MORKS XO

BY

# EDWIN W. STREETER,

Fellow of the Royal Geographical Society.

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